

BURNETT et al
Appl. No. 10/509,832
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AMENDMENTS TO THE CLAIMS:

This listing of claims will replace all prior versions, and listings, of claims in the application:

1-14 (cancelled).

15 (currently amended). A process for increasing the boiling point of organic nitrogen species present within a liquid hydrocarbon feed wherein said process comprises contacting a liquid hydrocarbon feed comprising an alkylating agent and organic nitrogen species, said liquid hydrocarbon feed being one or more petroleum fractions with a boiling range of 10-450°C selected from the group consisting of catalytically cracked naphtha, coker naphtha and visbroken naphtha, with an acidic catalyst at elevated temperature in a first reaction zone to generate a liquid hydrocarbon feed comprising a reduced alkylating agent content and organic nitrogen species of higher boiling point.

16 (currently amended). A process for reducing the nitrogen content of a liquid hydrocarbon feed wherein said process comprises:

a) contacting a liquid hydrocarbon feed comprising an alkylating agent and organic nitrogen species, said liquid hydrocarbon feed being one or more petroleum fractions with a boiling range of 10-450°C selected from the group consisting of catalytically cracked naphtha, coker naphtha and visbroken naphtha, with an acidic catalyst at elevated temperature in a first reaction zone to generate a liquid hydrocarbon

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feed comprising a reduced alkylating agent content and organic nitrogen species of higher boiling point; and

b) removing the organic nitrogen species of higher boiling point to generate a liquid hydrocarbon feed comprising a reduced alkylating agent content and a reduced nitrogen content.

17 (previously presented). A process according to claim 16 wherein the organic nitrogen species of higher boiling point is removed by fractionation.

18 (currently amended). A process according to claim 16 for reducing the sulphur and nitrogen content of a liquid hydrocarbon feed wherein said process comprises:

a) contacting a liquid hydrocarbon feed comprising an alkylating agent and organic nitrogen and organic sulphur species, said liquid hydrocarbon feed being one or more petroleum fractions with a boiling range of 10-450°C selected from the group consisting of catalytically cracked naphtha, coker naphtha and visbroken naphtha, with an acidic catalyst at elevated temperature in a first reaction zone to generate a liquid hydrocarbon feed comprising a reduced alkylating agent content, organic sulphur species and organic nitrogen species of higher boiling point;

b) contacting the liquid hydrocarbon feed comprising a reduced alkylating agent content, organic sulphur species and organic nitrogen species of higher boiling point with an acidic catalyst at elevated temperature in a second reaction zone to generate a liquid hydrocarbon feed comprising a reduced alkylating agent content,

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organic sulphur species of higher boiling point and organic nitrogen species of higher boiling point; and

c) fractionating the liquid hydrocarbon feed comprising a reduced alkylating agent content, organic sulphur species of higher boiling point and organic nitrogen species of higher boiling point to remove the organic nitrogen species of higher boiling point and the organic sulphur species of higher boiling point to generate a liquid hydrocarbon feed comprising a reduced alkylating agent content and a reduced nitrogen and sulphur content.

19 (currently amended). A process according to claim 16 for reducing the sulphur and nitrogen content of a liquid hydrocarbon feed wherein said process comprises:

a) contacting a liquid hydrocarbon feed comprising an alkylating agent and organic nitrogen and sulphur species, said liquid hydrocarbon feed being one or more petroleum fractions with a boiling range of 10-450°C selected from the group consisting of catalytically cracked naphtha, coker naphtha and visbroken naphtha, with an acidic catalyst at elevated at elevated temperature in a first reaction zone to generate a liquid hydrocarbon feed comprising a reduced alkylating agent content, organic sulphur species and organic nitrogen species of higher boiling point;

b) fractionating the liquid hydrocarbon feed comprising a reduced alkylating agent content, organic sulphur species and organic nitrogen species of higher boiling point to remove the organic nitrogen species of higher boiling point to generate a liquid

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hydrocarbon feed comprising a reduced alkylating agent content, organic sulphur species and a reduced nitrogen content;

c) contacting the liquid hydrocarbon feed comprising a reduced alkylating agent content, organic sulphur species and a reduced nitrogen content with an acidic catalyst at elevated temperature in a second reaction zone to generate a liquid hydrocarbon feed comprising a reduced alkylating agent content, organic sulphur species of higher boiling point and reduced nitrogen content; and

d) fractionating the liquid hydrocarbon feed comprising a reduced alkylating agent content, organic sulphur species of higher boiling point and a reduced nitrogen content to remove the organic sulphur species of higher boiling point to generate a liquid hydrocarbon feed comprising a reduced alkylating agent content and a reduced nitrogen and sulphur content.

20 (currently amended). A process according to claim 16 wherein the liquid hydrocarbon feed is selected from the group consisting of diesel, gasoline, kerosene and jet fuel.

21 (currently amended). A process according to claim 16 wherein organic nitrogen species is selected from the group consisting of alkyl amines, anilines, pyroles and pyridines.

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22 (previously presented). A process according to claim 16 wherein the liquid hydrocarbon feed comprising organic nitrogen species usually has a total nitrogen content (expressed as elemental N) of between 5-3000ppm N.

23 (previously presented). A process according to claim 16 wherein the organic nitrogen species have a boiling point of between 50 and 450°C.

24 (currently amended). A process according to claim 18 wherein the organic sulphur species is selected from the group consisting of mercaptans, thiophenes, benzothiophene, dibenzothiophenes and hindered alkyl substituted dibenzothiophenes.

25 (previously presented). A process according to claim 18 wherein the liquid hydrocarbon feed comprising an alkylating agent and organic nitrogen and sulphur species has a total sulphur content (expressed as elemental S) of 10-50000ppm S.

26 (currently amended). A process according to claim 19 wherein the organic sulphur species is selected from the group consisting of mercaptans, thiophenes, benzothiophene, dibenzothiophenes and hindered alkyl substituted dibenzothiophenes.

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27 (previously presented). A process according to claim 19 wherein the liquid hydrocarbon feed comprising an alkylating agent and organic nitrogen and sulphur species has a total sulphur content (expressed as elemental S) of 10-50000ppm S.

28 (previously presented). A process according to claim 16 wherein the acidic catalyst is a solid.

29 (previously presented). A process according to claim 16 wherein the first reaction zone is maintained at a temperature of between 50°C-300°C and at pressure of between 1-100 bar.

30 (previously presented). A process according to claim 18 wherein the second reaction zone is maintained at a temperature of between 100°C-300°C and at pressure of between 1-100 bar.

31 (previously presented). A process according to claim 19 wherein the second reaction zone is maintained at a temperature of between 100°C-300°C and at pressure of between 1-100 bar.